



# **EXCEPTION**

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Arizona Corporation Commission

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IN THE **MATTER** OF THE APPLICATION OF SUN CITY WATER COMPANY AND SUN CITY WEST **UTILITIES COMPANY** FOR APPROVAL OF CENTRAL ARIZONA PROJECT WATER UTILIZATION PLAN AND FOR AN ACCOUNTING ORDER AUTHORIZING A GROUNDWATER SAVINGS FEE AND RECOVERY OF DEFERRED CENTRAL ARIZONA PROJECT EXPENSES.

SW-02334A-98-0577

SUN CITY TAXPAYERS
ASSOCIATION'S EXCEPTIONS
TO ADMINISTRATIVE LAW
JUDGE'S RECOMMENDATION
AND REQUEST FOR
RESCISSION OR AMENDMENT
OF DECISION
NO. 62293

) **DOCKET NOS.** W-01656A-98-0577

The Sun City Taxpayers Association (the "Taxpayers") pursuant to Rule A.A.C. R14-3-110(B) hereby files Exceptions to the Recommendation Order of the Administrative Law Judge ("ALJ") in the above-captioned matter and also requests rescission or amendment of Decision No. 62293, previously entered in this same docket pursuant to A.R.S. § 40-252. The exceptions and the request for rescission or amendment of Decision No. 62293 are based on the following:

1. Changed circumstances warrant denial of the pending application and, to the extent deemed necessary to effectuate the denial, then a rescission or amendment of Decision No. 62293 should be granted pursuant to A.R.S. § 40-252 (authorizing the Commission to rescind, alter or amend any of its prior decisions).

LAW OFFICES
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The changed circumstances involve CAWCD's Agua Fria Recharge Facility becoming operational and showing great promise for benefiting the aquifer underlying the Sun Cities. Furthermore, a second recharge facility is being pursued by various municipal entities in a stretch of the Agua Fria between Bell and Thomas Road running parallel to Sun City and just south of Sun City West.

- 2. There is no valid Exchange Agreement because:
  - A. The Exchange Agreements have yet to be filed with and approved by the Arizona Department of Water Resources ("ADWR");
  - B. The Recreation Centers of Sun City have improperly leased to Sun City Water Company Sunland Memorial's
     Type 2 right;
  - Industrial use permits necessary to effectuate the exchange expire in 2005;
  - D. The taxpayers continue their judicial challenge of the Rec
     Centers of Sun City's authority to execute the Agreement
     without a vote of its members;
- 3. The Preliminary Engineering Report (PER) was premised upon false assumptions and fails to demonstrate that the distribution system to golf courses

in Sun City is a necessary element of the Plan;

- 4. The GSP will cause rate shock; and
- 5. The Project should be phased and all rate making decisions clearly separated from this decision.

#### I. <u>INTRODUCTION</u>

The Taxpayers wish to again thank the Commission and the ALJ for their continuing attention to this matter. The Taxpayers reiterate that they favor retaining the CAP allocations and putting the CAP water to use. However, they oppose the Groundwater Savings Project ("GSP") as a wasteful expenditure that will ultimately be borne by the residents of Sun City. Customers of Sun City Water and Sun City West Utilities (collectively referred to as the "Water Companies") should not be burdened with these discretionary costs unless first permitted a vote on the GSP.

# II. CHANGED CIRCUMSTANCES JUSTIFY REJECTION OF THE GSP AND, IF NECESSARY, RESCISSION OR AMENDMENT OF DECISION NO. 62293

It has been five years since the Water Companies organized a task force to review options associated with the use of CAP water. Much has happened in that time frame. Of particular import is the fact that in the Fall of 2001, CAWCD commenced operation of the Agua Fria Recharge Facility. There is now physical data that has been developed, and that is continuing to be developed, associated with this

facility. The data will demonstrate the direct and appreciable impact on the Sun Cities that can be achieved by the recharging activities at that facility. We are attaching hereto the textual portion of the combined Fourth Quarter Report and 2001 Annual Monitoring Report filed by the CAWCD on the Agua Fria Recharge Project. On Page 4, Section 3.2 entitled Regional Aquifer Groundwater Levels, the Report indicates that hydrologic responses were being detected after approximately three months as far as four miles downstream of the blow off structure. CAWCD's contor maps show that groundwater elevations have already increased substantially in the upper portion of the managed facility.

Furthermore, a second recharge facility is being pursued in the Agua Fria River from approximately Bell Road to Thomas Road. This recharge facility will have direct and appreciable impact on the cones of depression currently experienced south of Sun City. These two recharge projects, individually and together, should address all the concerns that lead to the GSP in the first instance.

In view of the fact that a recharge facility initially ran a close second to the groundwater savings project in the Task Force (and was actually favored by the technical subcommittee), the Taxpayers urge the Commission to re-evaluate its approval of the GSP concept, including Decision No. 62293 based upon actual data, not speculation. No further action authorizing the Water Utilities to pursue the GSP

should be taken by the Commission until the re-evaluation is complete.

The Taxpayers anticipate concerns about further delays. It must be recognized that the Water Utilities entire CAP allocation is being used through in-lieu recharge with MWD. There is nothing precluding the Water Utilities from utilizing all or part of their CAP allocation at the Agua Fria Recharge. Further, if the Water Utilities believe the Groundwater Savings Project constitutes such a benefit to themselves and the community, they can always proceed with the GSP without a Commission decision. They await a Commission decision solely to provide them greater certainty of rate recovery.

# III. THE WATER UTILITIES HAVE NOT ADEQUATELY ADDRESSED THE BINDING COMMITMENTS FROM GOLF COURSES, PUBLIC AND PRIVATE, AND THE TERMS AND CONDITIONS RELATED THERETO

A. The Failure To Submit The Exchange Agreements To The ADWR And Receive Approval Thereof, Renders The Agreement Unenforceable.

While the ALJ provided an extensive discussion of the issues and arguments made on the Preliminary Engineering Report ("PER"), he did not address the Water Utilities' failure to submit the water exchange agreements to ADWR.

A.R.S. § 45-1002 permits a person to withdraw, divert or use water received through a water exchange only if one or more of the statutorily prescribed conditions are

satisfied. The Water Utilities acknowledge that the agreements must be submitted to ADWR. (Tr. Vol. 2, P. 379, LL. 12-16.) The Water Utilities further admit no such filing has been made. (*Id.* at P. 379, L. 17-P. 380, L. 23). The Taxpayers confirmed last week that no filing had yet been made. It appears backwards for the Commission to approve a \$15 Million construction project prior to ADWR's receipt and approval of the exchange agreements; agreements that are necessary to effectuate the transfer of water under the GSP proposed by the Water Utilities. At a minimum, the Commission should not provide any further tacit approval of the GSP until the water exchange statutes are satisfied. The ALJ appears to have overlooked this critical issue.

B. Use Of The Sunland Memorial Park Water Rights.

The ALJ concludes that the documents submitted in this record lend adequate support to the company's contention that the Recreation Centers<sup>1</sup> have a valid agreement for use of the Sunland Memorial Park water rights. We have this date received an affidavit from Lori Spilde, the legal counsel for SCI Management C.P. and SCI Arizona Funeral Services, Inc. that does business as Sunland Memorial Park ("Sunland"). Her sworn affidavit indicates, inter alia, that the agreement "does not permit the Recreation Centers of Sun City to "assign, transfer or convey its rights under the agreement or Sunland's rights under the certificate"." Spilde Affidavit attached as Exhibit B.

<sup>1</sup> The ALJ incorrectly refers to Sun City West Recreation Centers when in fact it is the Recreation Centers of Sun City that have an agreement with Sunland Memorial Park regarding the use of certain water rights.

The lease of Sunland's water right is part of the mechanism identified in the Operating Agreements to ensure sufficient groundwater rights are available to continue to effectuate the exchange even if some of the water rights, like the General Industrial Use Permits, cease to exist. Under this concept, the rights controlled by the Rec Centers of Sun City are pooled and leased to the Water Utilities for use in making exchanges with the Rec Centers of Sun City West. Sunland Memorial's grandfathered right represents the largest right. The absence of that right will significantly impact the ability of the parties to perform under the pooling concept.

C. The General Industrial Use Permits Held By The Rec Centers Of Sun City West Expire August, 2005

The entire concept of an exchange is a "trade between one or more persons ... if each party has a right or claim to use the water it gives in trade. This definition applies whether or not water is traded in equal amounts or other consideration is included in the trade." *See* A.R.S. § 45-1001(6). The Recreation Centers of Sun City and the Recreation Centers of Sun City West hold grandfathered rights and/or general use permits as their sole authority to use water. The golf courses must not have sufficient rights to encompass both the exchange, and to meet their overall water needs. The evidence demonstrates that every Sun City West golf course, except Pebble Brook, will be short of water by between 232 af and 604 af annually once their General industrial Use Permits expire in August 2005 (a cumulative deficit

of 1,405.27 af annually). (SCTA-1 at p.8 and Attachment DH-6). The CAP exchange water does not supply this deficiency, it merely substitutes for existing supplies.

Therefore, a significant risk exists that one or more of these golf courses will have to close. There will be a pipeline and insufficient takers for the CAP Water. Mr.

Larson's testimony cited in the Recommendation does not address this deficiency at all. The exchange of CAP water is not a new source, but a replacement of an existing source. The exchange does not remedy the deficiency.

The Recommendation turns to the pooling arrangement as a method of meeting 1,705 acre feet of deficiency. However, the vast majority of the water available under the pool are related to Sunland Memorial and, this water is not available for the pool. As stated by Ms. Spilde, "Sunland currently has no intention to be bound by the October 30, 2000 Agreement for exchange of CAP waters in Sun City, or the April 26, 2001 Operating Agreement or to honor RCSC's assignment of its rights under the Agreement." Affidavit of Lori Spilde, attached.

D. The Taxpayers Litigation Challenging The Recreation Centers Of Sun Cities' Authority To Execute The Exchange Agreements Is Still Ongoing.

As the Commission is well aware, the Recreation Centers of Sun City and the Sun City Water Company were successful in obtaining a judgment to dismiss the Taxpayers action, *inter alia*, challenging the authority of the Recreation Centers to execute

the Exchange Agreement. The Taxpayers have filed a Motion for New Trial which has not yet been heard. Further, the Taxpayers intend to file an appeal if their Motion for New Trial is unsuccessful. Until the litigation is finally resolved by a nonappealable judgment or order, there is still uncertainty regarding the ultimate enforceability of the Exchange Agreement. Again, under such circumstances, a Decision approving the GSP is inappropriate.

# IV. THE PER DOES NOT DEMONSTRATE THE DISTRIBUTION SYSTEM IN SUN CITY IS A NECESSARY ELEMENT OF THE GSP

The Taxpayers respectfully disagree with the ALJ "that every alternative examined in the PER, including the proposed alternative A, uses the existing Sun City West effluent delivery system to the fullest extent possible." Recommendation on Page 13. In fact, the Water Utilities only reluctantly examined any option. The Water Utilities candidly asserted that they were not charged with examining any option that did not go to all Rec Center golf courses and deliver every acre foot of CAP thereto. (Tn. Vol. P.287). Nowhere in the record has Citizens presented evidence that its decision to design a system to deliver 100% of the CAP water to golf courses and to include all Rec Centers golf courses constitutes the most efficient delivery system. Until this basic showing has been made by Citizens, it has not satisfied the Commissions directive to demonstrate the need for all major components of the GSP, especially the

## V. THE GSP WILL CAUSE RATE SHOCK.

The Recommendation downplays the impact of a 25% increase in rates on residents of Sun City, Sun City West and Youngtown. Many of these persons are on fixed incomes. An increase of approximately \$5 a month are significant. The significance is increased when it is recognized that the company is likely to be seeking a similar level of increase based upon the plant and services rendered to its potable water customers. Further, the Taxpayers believe that the discretionary nature of the GSP, as well as the existence of viable and lower cost methods of putting CAP water to use, should all be considered by the Commission when weighing the adverse impacts of pursuing this discretionary project. The Taxpayers contend these factors are sufficient to tip the balance against approving the project.

Finally, the Taxpayers take no comfort at that portion of the Recommendation that states that approval of the PER in this proceeding does not guarantee all costs incurred will be automatically passed on to ratepayers (22, 11. 9-11). While the Taxpayers recognize that this proceeding is distinct from a ratemaking proceeding, an Order specifically approving the GSP as recommended in the PER, and as modified and clarified in the Supplemental Engineering Report, will be next to impossible to exclude from rates. In order to strengthen the Commission's ability to truly scrutinize the rates in a ratemaking proceeding, the Taxpayers urge the

Commission to adopt the following additional ordering paragraph:

It is further ordered that nothing in this Decision is intended to constitute, or shall be construed as, a commitment, guarantee or other form of assurance that the Groundwater Savings Project, any component thereof, or any expenses related thereto, except expenses related to conducting the preliminary engineering report, shall be recoverable in rates and the Commission specifically reserves full ratemaking authority in this regard.

## VI. ANY APPROVAL OF THE GSP SHOULD BE PHASED.

In the event the Commission proceeds with approval, the Taxpayers again urge the Commission to only approve the GSP along Lake Pleasant Road to the water campus. This will afford the Commission and the customers of the water utilities an opportunity to judge the efficacy of the GSP. It will also reduce the cost of the GSP by half, initially. The second phase should not be permitted to commence until after 2005. At that time the Commission will know whether the Sun City West golf courses were, or were not able to resolve their water shortage issues.

# VII. SUMMARY.

The Taxpayers' objective in participating in this proceeding has been aimed at protecting the pocketbooks of the Water Utilities' ratepayers. Until there is a vote from the customers supporting the GSP, the Taxpayers continue to believe that the costs of the GSP outweigh the benefits. The Taxpayers have suggested numerous alternatives to reduce costs. However, the Water Utilities never attempted to design the least-cost system

to put the CAP water to use on the golf courses. They had a concept and they continue to pursue that concept over the interim period, the Agua Fria Recharge Facility has become operational. The GSP should not be approved until the actual operating results of the Agua Fria Facility can be fully evaluated. The Agua Fria Recharge Facility, together with the new recharge facility planned (from Bell to Thomas) will address the concerns that led to the approval of the GSP in the first place. There simply is no reason to incur the enormous expense related to the GSP. The Taxpayers respectfully request that the Commission reject the Recommendation of the ALJ and deny any further approval of the GSP.

Respectfully submitted this 28

\_ day of May, 2002.

MARTINEZ & CURTIS, P.C.

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**Taxpayers Association** 

# PROOF OF SERVICE AND CERTIFICATE OF MAILING

I hereby certify that on this 28<sup>th</sup> day of May, 2002, I caused the foregoing document to be served on the Arizona Corporation Commission by hand-delivering the original and ten (10) copies of said document to:

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EXHIBIT A

# COMBINED FOURTH QUARTER REPORT AND 2001 ANNUAL MONITORING REPORT

# AGUA FRIA RECHARGE PROJECT Managed and Constructed Facilities

Underground Storage Facility Permit Nos. 71-569775.0001 (Managed) and 71-569776.0001 (Constructed)

> Water Storage Permit Nos. 73-569775.0100 (CAWCD) and 73-569775.0200 (Arizona Water Banking Authority)



# Prepared by:

**Central Arizona Water Conservation District** Water Planning Department 23636 North 7th Street Phoenix, Arizona 85024

March 29, 2001

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#### INTRODUCTION

This report documents operations and monitoring activities conducted at the Agua Fria Recharge Project (AFRP) during the 2001 annual reporting period. This report is a combined fourth quarter and annual monitoring report. Since managed recharge activities began late in the 2001 third quarter, the Central Arizona Water Conservation District (CAWCD) requested and received permission from the Arizona Department of Water Resources (ADWR) to include a small portion of the third quarter monitoring (September 18 through 30) into the annual report rather than prepare a separate report containing only a few weeks of data.

The AFRP is a combined managed and constructed recharge facility located in the northwest Phoenix Active Management Area (AMA) approximately 10 miles south of Lake Pleasant (Figure 1). CAWCD is developing the facility as a State Demonstration Project using monies from the state water storage fund (commonly known as "state demonstration funds"). The facility consists of two operational components: a managed facility consisting of a 4 mile river section used for recharge and for conveyance of surface water downstream and a constructed facility consisting of a headworks structure to capture surface flow in the river and a conveyance canal to route water downstream to 105 acres of spreading basins.

CAWCD (1998) submitted a hydrologic report and Underground Storage Facility Permit (USFP) application for the project in July 1998. Each operational component was permitted separately as an Underground Storage Facility (USF) through ADWR (1999a, 1999b). Due to anticipated access restrictions to several monitoring locations, CAWCD (2000) submitted a request to amend the original permits. ADWR approved the request and amended the original permits (ADWR; 2001a, 2001b). The USFPs are 71-569775,0001 for the managed facility and 71-569776,0001 for the constructed facility.

Managed recharge operations began on September 18, 2001, which included testing and calibration of the blowoff structure and flow meter. The blowoff structure is used to release CAP water from the Agua Fria River siphon into the managed facility (Figure 2). The managed recharge activities occurred simultaneously with construction of headworks, conveyance canal, and spreading basins. Recharge at the constructed facility is planned to begin in April 2002 and the project is planned to be fully operational in May 2002.

This report provides operational and monitoring data for the managed recharge activities that were conducted during the 2001 annual reporting period. Data provided in this report are tabulated and/or are presented as hydrographs where appropriate for analysis. Water recharge during the year was stored on behalf of the Arizona Water Banking Authority and the Central Arizona Groundwater Replenishment District.

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#### 2 PROJECT OPERATIONS

#### 2.1 Water Delivery

Managed recharge operations began on September 18, 2001 with calibration and testing of the blowoff structure and flow meter. Discharges to the river (recharge inflows) varied up to 270 cubic feet per second (cfs) for a few hours. Continuous recharge operations began on October 2, 2001 at an average inflow rates of 43 cfs. Throughout the remainder of the year flow rates ranged from 30 to 54 cfs. **Figure 3** shows average inflow rates for the managed facility.

In accordance with the monitoring plan for the managed facility, daily monitoring of the managed section was conducted to track the downstream migration of the river flow and to measure the wetted area for evaporation loss calculations. Measurements were conducted at marker stations established at 500 to 1,000 foot intervals. **Figure 4** shows the migration of surface flow in the managed facility over time. An aerial photo, taken on November 27, 2001, was used as a base to map the wetted area. At the end of 2002, the surface flow extended approximately 20,000 feet downstream of the blowoff structure. Throughout the 2001 annual reporting period, the surface water remained in the managed facility north of Jomax Road was generally clear and free of substantial algae growth.

#### 2.2 Recharge Volumes

Water deliveries to the managed recharge facility were measured using a flowmeter at the blowoff structure of the Agua Fria River siphon. The flowmeter consists of an 8-path Accusonic acoustic flow meter having an accuracy of +/- 0.15 percent. The flow meter measurements are automatically recorded and stored in a database at CAP headquarters using a Geomation data acquisition system. The Geomation system combined with the acoustic flow meter provides a high level of accuracy.

Total water deliveries to the managed facility during the 2001 annual reporting period were 8,462.0 acre-feet (AF). No deliveries were made to the spreading basins during this time period. Appendix A provides a daily accounting of managed recharge volumes for each month during the annual reporting period. Column 2 of each monthly report presents the daily delivery volumes from the blowoff structure. Column 3 shows the approximate length of flow in the managed section and column 4 is an estimate of the wetted area based on visual estimates. Aerial photography also was used to refine the wetted area estimates for November and December (see Figure 4).

Column 5 of each report is the calculated daily volume of water lost to evaporation based on the Cooley (1970) method using the "Maximum" curve and the total wetted area of the managed section as estimated by visual inspection and aerial photography. Net recharge is shown in Column 6 and is calculated as total recharge volume minus the calculated evaporation volume.

**Table A-1** in **Appendix A** summarizes the monthly and cumulative recharge volumes. As of December 31, 2001, a total of 8,462.0 AF were delivered to the project with 33.65 AF lost to evaporation (a 0.4% loss rate). The total net recharge volume for the project was 8428.35 AF.

#### 2.3 Other Activities

During the initial startup of the managed facility, grooming of the low flow channel of the river was conducted to contain the surface water within the flowage easement obtained from various land owners for the project. This entailed moving river bottom soils with small earthmoving equipment to create small berms and/or channels to route water to the proper location. Recharge deliveries were either reduced or terminated while the work was being conducted.

#### 2.4 Tributary Monitoring

Tributary monitoring was conducted in accordance with the monitoring plan during significant rainfall events to ensure that storm flows do not enter the managed facility. Monitoring was conducted at 10 sites along the east and west banks of the river during substantial rainfall events. Because of prolonged dry conditions in the Phoenix area, there were no rainfall events during the 2001 fourth quarter that produced surface water runoff.

#### 3 HYDROLOGIC MONITORING

Hydrologic monitoring at the AFRP managed facility consists of depth-to-water measurements at monitoring wells and piezometers. The monitoring was conducted in accordance with the monitoring plan approved by ADWR and ADEQ for the project (ADWR 2001a, 2001b). Eight monitoring sites were used for monitoring hydrologic responses at the managed facility.

Figure 2 shows the location of monitor wells and piezometers used in the monitoring program. The monitoring program for the managed and constructed facilities is also summarized on Table 1 and the construction details are summarized on Table 2. Water level hydrographs for monitor wells and piezometers are provided as Figures 5 and 6. The alert levels for water levels are shown on Table 1 and on the hydrographs. Section 6 of this report contains detailed information on the installation wells and piezometers during the 2001 annual reporting period. Appendix B contains as-built construction diagrams and borehole logs for the wells and piezometers installed by CAWCD.

#### 3.1 Basin Water Levels

Because the spreading basins were not constructed and operational during the 2001 annual reporting period, no basin water level monitoring was conducted.

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#### 3.2 Regional Aquifer Groundwater Levels

Depth-to-water measurements and calculated groundwater elevations for wells and piezometers that were used to assess hydrologic responses in the regional aquifer and vadose zone are shown on **Table 3**. **Figure 5** is a composite depth-to-water hydrograph of monitoring locations used for the managed facility. The monitoring data indicates that overall water levels at each location have risen due to recharge activities conducted during the year. Hydrologic responses occurred at different monitoring sites at different times depending on the location relative to the recharge project inflow point (blowoff structure).

Water level rises occurred at piezometer BOR-PZ-1 soon after the onset of recharge activities. Hydrologic responses occurred at well CAP-MW-4, CAP-MW-1, and AW-2 several weeks after beginning recharge. Piezometers PZ-1A and PZ-2A were installed in the vadose zone and were originally dry, but became saturated later due to rising ground water levels. Water was first detected at PZ-1A on November 7, 2001 and at PZ-2A on November 27, 2001. Hydrologic responses were not detected at well CAP-MW-3 until mid December. CAP-MW-3 is located at the south end of the managed facility approximately 4 miles downstream of the blowoff structure. At no time during the 2001 annual reporting period did water levels exceed established alert levels in any of the monitoring program wells and piezometers.

**Figure 6** is a high-resolution depth-to-water hydrograph for well CAP-MW-3. The hydrograph consist of pressure transducer readings recorded by a data logger having a sampling frequency of 12 hours. Also shown on the graphs are manual measurements taken with an electric sounder (shown in red). The hydrograph clearly shows that water levels increased slowly in response to the managed recharge operations. The water level at CAP-MW-3 increased approximately 12 feet by years end.

Figure 7 is a contour map showing the spatial distribution of ground water elevations based on measurements taken by CAWCD on September 12, 2001 just prior to beginning managed recharge activities. The contour map shows a steady decrease in groundwater elevations from the blowoff structure southward. The approximate gradient prior to recharge was 65 feet per mile (ft/mi) towards the south-southwest.

**Figure 8** is a contour map showing the spatial distribution of groundwater elevations based on measurements taken by CAWCD on January 23, 2002 after approximately 10,000 AF had been recharged. The contour map shows that ground water elevations increased substantially in the upper portion of the managed facility down to PZ-2A. South of PZ-2A, the gradient increases sharply before returning to elevations similar to pre-recharge conditions

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#### 3.3 Vadose Zone Groundwater Levels

Piezometers PZ-1A and PZ-2A were installed to assess the potential occurrence of perched water in the vadose zone on the west side of the managed facility adjacent to the orchards. Water levels at PZ-1A increased at the same rate as other wells in the vicinity (Figure 5) suggesting that PZ-1A is monitoring hydrologic responses in the regional aquifer.

Hydrologic responses occurred later at PZ-2, but more dramatically than at PZ-1A. The sharp water level increase may be due to its location closer to the flowage easement (Figure 2). Based on the subsurface geology encountered at PZ-2A and other monitoring sites installed for the project, the groundwater detected at PZ-2A appears to be related to the regional aquifer.

#### 4 INFILTRATION RATE ASSESSMENT

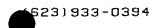
Infiltration rates are typically evaluated at recharge facilities to assess long-term infiltration rates. As with any recharge project, infiltration rates are expected to decline somewhat over time due to several factors, including basin clogging by deposition of suspended and wind blown sediment, and by biological activity. Frequent monitoring of infiltration rates allows detection of declining infiltration rates and provides a basis for basin management to optimize recharge, including periodic dry cycling and mechanical treatment to rejuvenate soil conditions.

#### 4.1 Testing Procedures

CAWCD typically analyzes infiltration rates at recharge basins using either the "falling head" and "volumetric" methods. The falling head method consists of shutting off inflows to a basin after filling to a sufficient stage and directly measuring the decline in basin levels using either manual or water level transducer measurements. The volumetric method is used when shutting down recharge basins is not desired. This method is best used when water depths are relatively stable. Since the river bottom material within the flowage easement varies from fine sand to tightly packed gravel and cobbles, the infiltration rates are expected to vary considerably along the managed section. To provide an average infiltration rate of the managed section a volumetric approach was used when conditions were relatively steady-state.

#### 4.2 Assessment of Results

Inflow rates to the managed section and the wetted area of the flowage easement were relatively stable on November 27, 2001 when an aerial photo of the river was taken. The aerial photo was used to provide a precise evaluation of the wetted area. The daily inflow rate was 100 AF and the wetted area was 36.93 acres providing an average infiltration rate of 2.7 ft per day. The relatively low infiltration rate is due to large sections of the river



comprised of tightly packed gravel and cobbles. Early in 2002, CAWCD plans to grade the flowage easement from the blowoff structure to the headworks area (Figure 2), which is expected to increase the infiltration rate.

#### 5 WATER QUALITY MONITORING

#### 5.1 Water Quality Sampling Activities

During the annual reporting period, water quality sampling and analysis were conducted in accordance with the USFPs for the managed facility (ADWR; 2001a, 2001b). The project-monitoring program was based on the monitoring plan prepared by CAWCD (1998a) and approved by ADWR and the Arizona Department of Environmental Quality (ADEQ). The following summarizes the water quality sampling events conducted during the 2001 fourth quarter.

Source water and groundwater samples were collected in October 2001 to evaluate prerecharge baseline ground water conditions and the quality of the source water. Due to
construction activities associated with several of the well installations, sampling could not
be conducted until October. During the sampling event, CAP source water was sampled at
the blowoff structure and analyzed for the same chemical constituents as the primary
groundwater samples. CAWCD personnel collected a groundwater sample from well CAPMW-1 on October 29, 2001 and a source water sample on October 30, 2001. CAWCD's
consultant, Kleinfelder, Inc of Tempe, Arizona, collected groundwater samples from newly
installed monitor wells CAP-MW-3 on October 18, 2001 and CAP-MW-4 on October 15,
2001 (Kleinfelder; 2002a, 2002b). Because CAWCD and Kleinfelder conducted the
sampling over several dates, no trip blanks or field duplicate samples were collected.
These samples will be included in future routine sampling events. The following describes
details of the sample collection performed by CAWCD. Details of the sampling conducted
by Kleinfelder are contained in the well installation reports for wells CAP-MW-4 and CAPMW-3, which are included in Appendix E.

Sample collection procedures for wells sampled by CAWCD consisted of pumping each monitor well with a dedicated submersible pump at a rate between 30 and 38 gallons per minute (gpm) depending on the pump's efficiency. During purging, physical parameters including pH, electrical conductivity (EC), and temperature were monitored to assess stability. At least five well volumes were purged from each well before collecting a sample for analysis from the well's sample port. The samples were collected in clean bottles prepared and provided by the analytical laboratory. Samples collected for the metals analysis were not field filtered providing sample matrices for total metal concentrations.

Once the samples were collected, they were labeled and placed in a cooler with wet ice for shipment to the analytical laboratory. The samples were submitted under chain-of-custody control to Montgomery Watson Laboratories in Pasadena, California for analysis. The groundwater samples were submitted for the following analyses in accordance with the

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#### monitoring plan:

- General minerals including nitrates as nitrogen and nitrates as nitrite
- Total organic carbon
- Total coliform bacteria and fecal coliform bacteria
- Physical parameters
- Trace metals (total concentrations)
- Organochlorine pesticides by EPA Method 508
- Chlorinated herbicides by EPA Method 515.1
- Volatile organic compounds (VOCs) purgeable by EPA Method 524.2
- VOCs (extractable) by EPA Method 525.2
- Carbofuran and other compounds by EPA Method 531.1
- EDB and DBCP by EPA Method 504.1
- Endothall by EPA Method 548.1
- Diquat and paraguat by EPA Method 549.2
- Glyphosate by EPA Method 547

The source water sample was submitted for the following analyses in accordance with the monitoring plan:

- General minerals including nitrates as nitrogen and nitrates as nitrite
- Total organic carbon
- Total coliform bacteria and fecal coliform bacteria
- Physical parameters
- Trace metals (total concentrations)
- Organochlorine pesticides by EPA Method 508
- Chlorinated herbicides by EPA Method 515.1

Due to short holding times, samples collected for the total coliform, nitrates as nitrogen (N), and nitrates as nitrite were delivered separately to Precision Laboratories in Tempe, Arizona for analysis.

Purge characterization logs for the October 2001 sampling event are provided in **Appendix C** and chain-of-custody and laboratory data sheets are provided in **Appendix D**.

## 5.2 Chemical Analysis Results

Results of the water quality analysis conducted for groundwater and source water samples are provided on **Table 4**. Also shown for comparison are the numeric Aquifer Water Quality Standard (AWQS), and project specific alert levels that were established in the USFPs. The following presents an assessment of the water quality sampling results.

#### 5.2.1 Source Water

Analytical results of source water samples did not indicate the presence of any analyte at concentrations exceeding established AWQS. No pesticides or herbicides were detected in the EPA Method 508 or 515.1 analyses above laboratory reporting limits, respectively. Results of the general minerals, physical parameters (except temperature), and trace metals analyses were consistent with previous sampling of the CAP aqueduct in the project vicinity. Bacteria concentrations in the source water were reported at 30 most probable number per 100 milliliters (mpn/100ml) for both the total coliform bacteria and fecal coliform bacteria analyses. The concentrations detected are typical of CAP water and surface water in general.

#### 5.2.2 Groundwater

General water chemistry results for the three monitoring wells sampled during the 2001 fourth quarter indicate that wells CAP-MW-1 and CAP-MW-3 had water quality similar to pre-recharge conditions (CAWCD, 1998a), whereas CAP-MW-4 had water quality similar to CAP water. Since the sampling was conducted shortly after project start-up, water quality transformations had already occurred at the monitor well closest to the facility inflow point. Well CAP-MW-4 is located within a few hundred feet of the blowoff structure, whereas the other wells (CAP-MW-1 and CAP-MW-3) are located at considerable distance downstream. The following summarizes water quality issues specific to the AFRP.

#### Pesticides and Herbicides

Laboratory analysis of groundwater samples collected from the three monitor wells did not indicated the presence of pesticides or herbicides above laboratory reporting limits in the analyses conducted by EPA Methods 504.1, 508, 515.1, 525.2, 531.1, 548.1, 549.2, and 547.

#### Volatile Organic Compounds (VOCs)

VOCs were evaluated for groundwater samples collected from the three monitor wells using EPA Methods 524.2 and 525.2. No VOCs were reported for the EPA 525.2 method, but low concentrations of several VOC compounds were detected in the EPA 524.2 analysis for the sample collected by Kleinfelder (2002a) from well CAP-MW-3. These compounds include bromodichloromethane (3.4 ug/L), bromoform (1.0 ug/L), chlorodibromomethane (1.9 ug/L), chloroform (19 ug/L), and total trihalomethanes (25 ug/L). The concentrations detected were well below the project specific alert levels and AWQS. None of the other wells had VOC compounds detected using this analytical method. The presence of these compounds in well CAP-MW-3 is unusual and may be related to construction of the well. The well was drilled using drilling mud using a variety of enhancement substances (polymers) as described in detail in Appendix E. The source of the detections may be related to residuals remaining after well development. Future

quarterly sampling will be conducted to assess concentrations in the well.

#### Metals Analysis

The source water and groundwater samples from the three monitor wells were analyzed for 15 trace metals. None of the metals tested exceeded project specific alert levels or AWQS.

#### Nitrates as Nitrogen and Nitrates as Nitrite

Samples from the source water and the three monitor wells were analyzed for concentrations of nitrate as nitrogen (N) and nitrates as nitrite. Nitrate as N concentrations were very low for the source water and groundwater samples. The concentrations ranged from ND to 2.6 mg/L, which are well below the AWQS of 10 mg/L. Nitrate as nitrite concentrations were not reported for any of the samples above analytical reporting limits.

#### Total Coliform Bacteria

Total coliform bacteria were detected in two of the three monitor wells and the source water; however, no concentrations of fecal coliform bacteria were reported in the three monitor wells. Total coliform bacteria concentrations were reported in the CAP-MW-1 sample collected by CAWCD and in the CAP-MW-4 sample collected by Kleinfelder (2002b). The CAP-MW-1 sample was inadvertently performed by the laboratory using the presence/absence method (Method M9223B), so the concentration was unknown. CAWCD performed confirmatory sampling of the well on November 28, 2001, which resulted in no concentrations detected by the laboratory above analytical testing limit.

Total coliform bacteria concentrations for the well sampled by Kleinfelder (CAP-MW-4) were reported at the analytical testing method of 2 mpn/100mL. The well was not resampled because reporting of the results to CAWCD was substantially delayed. However, the well was sterilized upon completion of the well construction just prior to sampling (Kleinfelder, 2002b), therefore it is doubtful the significant concentrations, if any, are present in the well. CAWCD resampled the well during the next quarterly sampling round (January 2002) and the laboratory did not reported concentrations above the analytical reporting limit.

#### Alert Level Exceedences

Other than the unconfirmed detection of total coliform bacteria at well CAP-MW-3, none of the analytes tested had concentrations that exceed project water quality alert levels.

#### General Water Chemistry

The concentrations of general anions and cations suggest that well CAP-MW-4 has water

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more closely related to the source water than the other two monitor wells (Table 4). TDS concentrations for CAP-MW-1 (280 mg/L) and CAP-MW-3 (330 mg/L) were much lower than for well CAP-MW-4 (570 mg/L) and the source water sample (590 mg/L). Similar relationships are apparent with chloride, potassium, sulfate, and electrical conductivity.

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#### 5.3 Quality Assurance/Quality Control (QA/QC)

The quality assurance/quality control program for this project is based on procedures presented in the approved monitoring plan (CAWCD 1998a). Those procedures were designed to comply with ADEQ's Quality Assurance Project Plan. The following provides internal and external QA/QC procedures utilized by CAWCD for the 2001 fourth quarter sampling events that included sampling of well CAP-MW-1 and the source water.

#### Internal QA/QC

To provide a high degree of QA/QC for the sampling activities, the proper field and sampling procedures presented in the monitoring plan were followed. This included documenting sampling information immediately upon sample collection and using proper chain-of-custody and sample handling procedures to ensure continuity of sample identification. For the October 2001 sampling (Round 1), all samples except for total coliform bacteria and nitrate (as N) were submitted to Montgomery Watson Laboratories in Pasadena, California for analysis. Sample bottles for total coliform bacteria, nitrates (as N), and nitrates as nitrites were submitted to Precision Laboratories in Tempe, Arizona due to the short holding time. Both Montgomery Watson and Precision Laboratories are certified by the Arizona Department of Health Services for the requested analyses.

The QA/QC plan specifies duplicate samples and trip blanks when volatile organic compounds (VOCs) samples are analyzed. VOCs and trip blanks were not collected for analysis in the first sampling round because the sample collection was conducted over a several week period and only two samples were collected. Trip blanks and field duplicates will be collected in all future sampling rounds.

#### External QA/QC

Both Precision Analytical and Montgomery Watson Laboratories prepare test samples to assess precision and accuracy. For the wet chemistry, metals analysis, VOCs and pesticide/herbicides analyses; method blanks, laboratory control samples (LCS), matrix spike (MS) and matrix spike duplicate (MSD) samples were prepared and analyzed along with the primary samples. Results of the analyses indicate that all laboratory tests (RPDs, % Recovery, etc.) were performed within industry standards, except for the following:

Montgomery Watson (MW) reported that for the CAP-MW-1 sample analysis (QC Batch #156987), the gamma-chlordane MS was recovered outside the laboratory's internal QC limit for, but within the EPA Method limit. The laboratory did not indicate that an impact on the reported results was suspected.

- For the MW QC Batch #157158 (CAP-MW-1), low MS recovery of paraquat and diquat was possibly due to matrix interference. The laboratory indicated that the reported results were acceptable based on all other QC specifications.
- MW reported that for the source water sample analysis (QC Batch #156914), the MSD recovery was outside the laboratory's internal QC limit for acifluorfen, but within the EPA Method limit. The laboratory did not indicate that an impact on the reported results was suspected.
- For the same QC batch, the LCS1 recovery was outside the laboratory's internal QC limit for bentazon, DCPA, and dinoseb, but within the EPA Method limit. The MS and MSD recovery also was outside the laboratory's internal QC limit for DCPA, but within the EPA Method limit. The laboratory indicated that the reported results might have been biased.
- For the source water sampling, MW indicated that analysis of the nitrates as N and nitrates as nitrite exceeded the 48 hr hold time by 1.5 hours. The laboratory reported the results as ND (non-detectable). At the time of sampling, CAWCD collected a split sample and submitted it to Precision Analytical for the same analysis. Precision analyzed the sample within holding time and reported the results as ND for both tests.

#### 6 NEW MONITORING FACILITY INSTALLATIONS

Several monitor wells and piezometers were installed during the 2001 annual reporting period to comply with provisions of the USFP. Installations for the managed facility included monitor wells CAP-MW-3 and CAP-MW-4 and piezometers PZ-1A and PZ-2A. Installations for the constructed facility included monitor well CAP-MW-2 and piezometer PZ-6 (Figure 2). CAWCD's consultant, Kleinfelder of Tempe, Arizona, installed wells CAP-MW-3 and CAP-MW-4, and piezometer PZ-1A. Details of the installations are provided in Kleinfelder's reports contained in **Appendix E**. Details of the installations conducted by CAWCD are provided below.

#### Monitor well CAP-MW-2

Monitor well CAP-MW-2 was drilled and constructed between February 7 and 13, 2001. The well was installed southeast of the constructed facility as shown on **Figure 2** to replace a City of Phoenix well (COP-MW-2), which was damaged by vandalism. CAP-MW-2 will be used to monitor water levels and water quality during operation of the constructed facility.

Layne-Christensen Company of Chandler, Arizona drilled the 10-inch diameter borehole for

CAP-MW-2 using an AP-1000 truck-mounted drill rig equipped with the dual-wall percussion-hammer drilling method. The drilling and well installation was conducted under the direct supervision of a CAWCD hydrogeologist. During the drilling, cutting samples were collected at approximately 5-foot intervals for lithologic logging from ground surface to the termination depth. Soils encountered to a depth of 44 feet consisted of well-graded, sandy gravel and cobbles. At 44 feet, a 3-foot clay unit was encountered that overlaid well-graded, clayey gravel and cobbles to depth of 142 feet, where hard sandstone conglomerate was encountered. The conglomerate unit consisted of sand-gravel mixtures with a well to moderately cemented calcareous matrix. Drilling refusal with the AP-1000 was encountered at a depth of 194 feet in the conglomerate unit. An air-hammer drill rig was used to drill through the dual wall casing to the termination depth of 300 feet. Static groundwater was encountered at a depth of 282 feet. Appendix B contains a borehole log for well CAP-MW-2.

After removal of the air-hammer drilling system, the dual-wall was pushed to a depth of 243 feet. Due to collapse of material into the hole, the dual-wall casing could not be pushed any further and the well was installed in the dual-wall as a dry monitor well. The well was constructed using 5-inch diameter, schedule 40, steel casing. A 60 foot screened section consisting of 0.060-inch factory vertical slots was set in the depth interval of 183 to 243 feet across consolidated sandy gravel and cobble deposits. The filter pack consisted of 1/4 to 3/8-inch diameter clean gravel and was placed in the depth interval of 173 to 243 feet. Ten feet of No. 60 silica fine sand was then placed above the gravel pack and bentonite cement slurry was placed above the fine sand to ground surface. An as-built of the well construction is also included in **Appendix B**.

A groundwater pump system was not installed in the well because the well was dry upon installation. Groundwater elevations are rising in the area from the ongoing managed recharge activities. Once sufficient water is present in the well, it will be developed and sampled according to the monitoring plan.

#### Piezometer PZ-6

Piezometer PZ-6 was drilled and constructed between February 12 and 16, 2001. The well was installed south of the constructed facility as shown on **Figure 2** to monitor the potential occurrence of perched recharge in the vadose zone south of the facility. The drilling and well installation was conducted under the direct supervision of a CAWCD hydrogeologist.

Layne-Christensen Company of Chandler, Arizona drilled the 6-inch diameter borehole for PZ-6 using an All Terrain drill rig equipped with a 6-inch air hammer. The drill rig did not have the capability to drive drill casing, so the borehole was advanced as an open hole. Air was used to a depth of 40 feet to circulate the cuttings out of the borehole followed by mud rotary drilling with a 6-inch tricone bit to the termination depth of 165 feet.

During the drilling, cutting samples were collected at approximately 5-foot intervals for



lithologic logging from ground surface to the termination depth. Soils encountered to a depth of 160 feet consisted of well-graded, sandy gravel and cobbles. At 160 feet, a conglomerate unit, similar to that observed at CAP-MW-2, was encountered. The conglomerate consisted of sand-gravel mixtures with a well to moderately cemented calcareous matrix. No groundwater was encountered at PZ-6 while drilling. **Appendix B** contains a borehole log for piezometer PZ-6.

Upon completion of the drilling, a 2-inch diameter schedule 80, PVC piezometer was constructed in the open borehole. Due to minor collapse within the borehole, the piezometer was set to a depth of 157 feet instead of 165 feet as originally planned. The well screen consisted of 20 feet of PVC screen placed in the depth interval of 137 feet to 157 feet across well-graded sand and cobble deposits. The screen consisted of horizontal factory slots having 0.030-inch openings. The filter pack consisted of #8-12 silica sand and was placed in the depth interval of 130 feet to 157 feet. Five feet of bentonite pellets was then placed above the filter pack and bentonite cement slurry was placed above the bentonite seal to ground surface. An as-built of the piezometer construction is included in **Appendix B**.

#### Piezometer PZ-2A

Piezometer PZ-2A was drilled and constructed between June 19 and 21, 2001. The well was installed on the west bank of the Agua Fria River as shown on **Figure 2** to provide a monitoring point west of the flowage easement near pre-existing orchards. The piezometer was intended to monitor the potential occurrence of perched recharge water or rising groundwater levels in the area. The drilling and well installation was conducted under the direct supervision of a CAWCD hydrogeologist.

Layne-Christensen Company of Chandler, Arizona drilled the 6-inch diameter borehole for PZ-2A using an All Terrain drill rig equipped with a 6-inch air hammer. The drill rig did not have the capability to drive drill casing, so the borehole was advanced as an open hole. Air was used to a depth of 20 feet to circulate the cuttings out of the borehole followed by mud rotary drilling with a 6-inch tricone bit to the termination depth of 150 feet.

During the drilling, cutting samples were collected at approximately 5-foot intervals for lithologic logging from ground surface to the termination depth. Surficial soils encountered to a depth of 10 feet consisted of micaceous silty sand. Sandy gravel and cobble deposits underlay the surficial soils to a depth of 48 feet where a 5-foot silt and clay layer was encountered. Sandy gravels and cobbles with some boulders underlay the silt and clay layer to a depth of 115 feet, where a sandstone conglomerate was encountered. The conglomerate appeared similar to deposits encountered at CAP-MW-2, CAP-MW-3, and PZ-6. No groundwater was encountered at PZ-2A while drilling. **Appendix B** contains a borehole log for piezometer PZ-2A.

Upon completion of the drilling, a 2-inch diameter schedule 80, PVC piezometer was

constructed in the open borehole. Due to substantial collapse within the borehole from the unconsolidated alluvium, the piezometer was set to a depth of 73 feet instead of 150 feet as originally planned. The well screen consisted of 20 feet of PVC screen placed in the depth interval of 53 feet to 73 feet across well-graded sand and cobble deposits. The screen consisted of horizontal factory slots having 0.030-inch openings. The filter pack consisted of #8-12 silica sand and was placed in the depth interval of 48 feet to 150 feet. Three feet of bentonite pellets was then placed above the filter pack and bentonite cement slurry was placed above the bentonite seal to ground surface. An as-built of the piezometer construction is included in **Appendix B**.

#### 7 CONCLUSIONS

Managed recharge operations at the AFRP began on September 18, 2001 with calibration and testing, followed by continuous recharge operations on October 2, 2001. The managed recharge was conducted simultaneously with construction efforts at the spreading basin facility, which are planned to be fully operational in May 2002.

Inflow rates to the managed facility averaged about 43 cfs. At the end of 2002, the surface flow extended approximately 20,000 feet downstream of the blowoff structure (inflow point). Total water deliveries to the managed reach during the 2001 annual reporting period were 8,462.0 AF with 33.65 AF lost to evaporation (a 0.4% loss rate). The total net recharge volume for the project was 8428.35 AF.

Hydrologic responses to recharge activities were monitored weekly at piezometers and monitor wells. Water level rises first occurred at piezometer BOR-PZ-1 near the blowoff structure. Water level rises were then observed at locations progressively further down stream as the surface water in the flowage easement advanced. By years end, approximately 12 feet of water level rise was observed at the southernmost monitoring point, CAP-MW-3. At no time during the 2001 annual reporting period did water levels exceed established alert levels in any of the monitoring program wells and piezometers.

Groundwater elevations were contoured for measurements taken prior to beginning recharge on September 12, 2001 and after nearly 10,000 AF had been recharged (January 23, 2002). The contour maps show a remarkable change in the groundwater elevations and gradients in the managed section of the project. The elevation changes reflect rising groundwater elevations in the uppermost portion of the managed section due to infiltrating CAP water in the flowage easement. Using a volumetric approach an infiltration rate of 2.7 ft/day was estimated for the flowage easement.

Groundwater and source water sampling was conducted during the 2001 fourth quarter for the managed facility. Results of the sampling indicate than none of the analytes tested in the source water were at concentrations above project specific alert levels or AWQS. Groundwater samples were collected from three monitor wells (CAP-MW-1, CAP-MW-3 and CAP-MW-4) in the managed section. Results of the ground water sampling indicate than none of the analytes tested, except for total coliform bacteria, were at concentrations

above project specific alert levels or AWQS. Total coliform bacteria were reported for the sample collected by CAWCD (CAP-MW-1) and for the sample collected by Kleinfelder (CAP-MW-4). Confirmatory sampling was conducted by CAWCD for well CAP-MW-1 and was reported as ND by the laboratory. The CAP-MW-4 detection was not reported to CAWCD for sometime due to delays in report submittals; however, the detection was at the analytical reporting limit of 2 mpn/100mL. Given that CAP-MW-4 was sterilized prior to sampling it is unlikely that total coliform bacteria are present in the well. Future quarterly sampling events will be used to assess the presence of bacteria in the well.

Several monitor wells and piezometers were installed during the 2001 annual reporting period to comply with provisions of the USFP. Installations for the managed facility included monitor wells CAP-MW-3 and CAP-MW-4 and piezometers PZ-1A and PZ-2A. Installations for the constructed facility included monitor well CAP-MW-2 and piezometer PZ-6. Monitor well CAP-MW-2 was installed above the groundwater table due to drilling rig refusal. Rising groundwater levels from managed recharge activities may allow sampling prior to or shortly after the constructed basins become operational. The last three monitoring point installations are piezometers PZ-4, PZ-5 and PZ-6. These piezometers surround the constructed basins and are scheduled for installation in March 2002.

#### 8 REFERENCES AND SUMMARY OF PROJECT REPORTS

Arizona Department of Water Resources, 1999a, Underground Storage Facility Permit, Managed, First Amended, Permit No. 71-569775.0001, May 4, 1999.

Arizona Department of Water Resources, 1999b, Underground Storage Facility Permit, Constructed, First Amended, Permit No. 71-569776,0001, May 4, 1999.

Arizona Department of Water Resources, 2001a, Underground Storage Facility Permit, Managed, First Amended, Permit No. 71-569775.0001, August 20, 2001.

Arizona Department of Water Resources, 2001b, Underground Storage Facility Permit, Constructed, First Amended, Permit No. 71-569776.0001, August 20, 2001.

Central Arizona Water Conservation District, 1998, Hydrogeologic Report and Underground Facility Permit Application, dated July 1998.

Central Arizona Water Conservation District, 2000, Letter to ADWR regarding "Monitoring Plan Modification Submittal for the Agua Fria Recharge Project, USF Permit Nos. 71-569775 and 71-569776", dated December 4, 2000.

Kleinfelder, Inc. 2002a, Well Installation Report for Monitor Well CAP-MW-3, Agua Fria Recharge Project, Maricopa, County, Arizona, ADWR Reg. No. 55-586834, dated January 14, 2001.

Kleinfelder, Inc. 2002b, Well Installation Report for Piezometer PZ-1A, ADWR Reg. No. 55-

588090 and Monitor Well CAP-MW-4, ADWR Reg. No. 55-587997, Agua Fria Recharge Project, Maricopa, County, Arizona, dated January 15, 2001.

EXHIBIT B

1 AFFIDAVIT OF LORI SPILDE 2 STATE OF TEXAS ) ss. 3 County of Harris I, Lori Spilde, being first duly sworn, depose and state as follows: 5 1. I am Corporate Counsel for SCI Management L.P. located at 1929 Allen 6 Parkway, Houston Texas 77019. I am also Corporate Counsel for SCI Arizona Funeral Services, Inc., an 2. 8 Arizona corporation. 9 3. SCI Arizona Funeral Services, Inc. does business as Sunland Memorial 10 Park ("Sunland") in Sun City, Arizona. 11 SCI Arizona Funeral Services, Inc. is the successor in interest to Matthews 4. 12 Corporation, the former owner of Sunland. 13 5. Sunland is the vested holder of the Type II Grandfathered Water Rights 14 No. 58-101680 ("Water Rights") reflected in the Certificate of Grandfathered Groundwater 15 16 Rights (the "Certificate") attached hereto as Exhibit A. 17 6. To the best of my knowledge, Sunland has never conveyed, transferred or 18 relinquished any portion of its ownership of its Water Rights. 19 7. Sunland has allowed the Recreation Centers of Sun City ("RCSC") to use 20 a portion of Sunland's Water Rights as reflected in the July 15, 1982 agreement attached hereto 21 as Exhibit B (the "Agreement"); however, Sunland did not convey ownership of any portion of 22 the Water rights in the Agreement. 23 8. The Agreement does not permit RCSC to assign, transfer or convey its 24 rights under the Agreement or Sunland's rights under the Certificate. 25

	9.	To the	best of	my kno	wledge,	at no	time !	has	Sunland	granted	RCSC	the
right to a	assign RCS0	C's intere	st unde	r the Ag	greemen	t.						

- 10. To the best of my knowledge, Sunland was neither consulted nor did it give consent for the use of its Water Rights as contemplated in the October 30, 2000 Agreement for Exchange of CAP Water in Sun City, or the April 26, 2001 Operating Agreement.
- 11. To the best of my knowledge, Sunland was neither consulted nor did it give consent for RCSC's assignment of its rights under the Agreement for the purpose set forth in the October 30, 2000 Agreement for Exchange of CAP Water in Sun City, or the April 26. 2001 Operating Agreement.
- Sunland currently has no intention to be bound by the October 30, 2000 12. Agreement for Exchange of CAP Water in Sun City, or the April 26, 2001 Operating Agreement or to honor RCSC's assignment of its rights under the Agreement.
- 13. Sunland is willing to take all necessary legal action to protect its interests in its Water Rights and to defeat any unauthorized assignment of the same.

FURTHER AFFIANT SAYETH NAUGHT.

SUBSCRIBED AND SWORN TO before me this 29 day of May, 2002 by

Lori Spilde, Esq.

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